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# **Attention deficit hyperactivity disorder**

**Diagnosis and management of ADHD in  
children, young people and adults**

## **NICE clinical guideline 72**

### **Attention deficit hyperactivity disorder**

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## Introduction

This guideline makes recommendations for the diagnosis and management of attention deficit hyperactivity disorder (ADHD) in children, young people and adults. The guideline does not cover the management of ADHD in children younger than 3 years. The term 'children' refers to those aged 11 years and younger; 'young people' refers to those between 12 and 18 years. However, these categories are flexible and clinicians should use their judgement about a child or young person's developmental, as opposed to their chronological, age.

ADHD is a heterogeneous behavioural syndrome characterised by the core symptoms of hyperactivity, impulsivity and inattention. While these symptoms tend to cluster together, some people are predominantly hyperactive and impulsive, while others are principally inattentive. Two main diagnostic criteria are in current use – the International Classification of Mental and Behavioural Disorders 10th revision (ICD-10) and the Diagnostic and Statistical Manual of Mental Disorders 4th edition (DSM-IV). ICD-10 uses a narrower diagnostic category, which includes people with more severe symptoms and impairment. DSM-IV has a broader, more inclusive definition, which includes a number of different ADHD subtypes. Although ICD-10 excludes any comorbidity, for the purposes of this guideline coexisting conditions are accepted as a common aspect of the diagnosis and treatment of ADHD.

Symptoms of ADHD are distributed throughout the population and vary in severity; only those with significant impairment meet criteria for a diagnosis of ADHD. Symptoms of ADHD can overlap with symptoms of other related disorders, and ADHD cannot be considered a categorical diagnosis. Therefore care in differential diagnosis is needed. Common coexisting conditions in children with ADHD are disorders of mood, conduct, learning, motor control and communication, and anxiety disorders; in adults they include personality disorders, bipolar disorder, obsessive-compulsive disorder and substance misuse. As a result, ADHD cannot be considered a categorical diagnosis.

Not every person with ADHD has all of the symptoms of hyperactivity, impulsivity and inattention. However, for a person to be diagnosed with ADHD, their symptoms should be associated with at least a moderate degree of psychological, social and/or educational or occupational impairment. For the purposes of this guideline, where the word 'impairment' is used in the recommendations, it means 'psychological, social and/or educational or occupational impairment'.

Moderate ADHD in children and young people is taken to be present when the symptoms of hyperactivity/impulsivity and/or inattention, or all three, occur together, and are associated with at least moderate impairment, which should be present in multiple settings (for example, home and school or a healthcare setting) and in multiple domains (domains refers to a type of social or personal functioning in which people ordinarily achieve competence, such as, achievement in schoolwork or homework; dealing with physical risks and avoiding common hazards; and forming positive relationships with family and peers), where the level appropriate to the child's chronological and mental age has not been reached. Determining the severity of the disorder should be a matter for clinical judgement, taking into account the severity of impairment, pervasiveness, individual factors and familial and social context.

The level of impairment could also be estimated by using a predetermined level on a global adjustment scale (for example, a score of less than 60 on the children's global assessment scale [C-GAS]).

In later adolescence and adult life, the range of possible impairment extends to educational and occupational underachievement, dangerous driving, difficulties in carrying out daily activities such as shopping and organising household tasks, in making and keeping friends, in intimate relationships (for example, excessive disagreement) and with childcare.

Severe ADHD corresponds approximately to the ICD-10 diagnosis of hyperkinetic disorder. This is defined as when hyperactivity, impulsivity and

inattention are all present in multiple settings, and when impairment is severe (that is, it affects multiple domains in multiple settings). Again, determining severity is a matter of clinical judgement.

For the sake of clarity, the Guideline Development Group has examined the validity of the diagnosis of ADHD, and advice is given about diagnosis in the recommendations.

Based on the narrower criteria of ICD-10, hyperkinetic disorder is estimated to occur in about 1–2% of children and young people in the UK. Using the broader criteria of DSM-IV, ADHD is thought to affect about 3–9% of school-age children and young people in the UK, and about 2% of adults worldwide.

In general, ADHD is a persisting disorder. Of the young people with a sustained diagnosis, most will go on to have significant difficulties in adulthood, which may include continuing ADHD, personality disorders, emotional and social difficulties, substance misuse, unemployment and involvement in crime.

This guideline assumes that prescribers will use a drug's summary of product characteristics to inform their decisions for individual people. At the time of publication (September 2008), methylphenidate, atomoxetine and dexamfetamine did not have UK marketing authorisation for the treatment of adults with ADHD. However, atomoxetine is licensed for use in adults with ADHD when treatment with the drug began in childhood. At the time of publication, methylphenidate and atomoxetine did not have UK marketing authorisation for use in children younger than 6 years. Prescribers should advise people with ADHD and their parents or carers of the implications of prescribing unlicensed or 'off-label' drugs. Informed consent should be obtained and documented.

NICE has published two technology appraisals relevant to the management of ADHD<sup>1, 2</sup>. This guideline incorporates recommendations from both technology appraisals.

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<sup>1</sup> Methylphenidate, atomoxetine and dexamfetamine for attention deficit hyperactivity disorder (ADHD) in children and adolescents (review of technology appraisal 13) (NICE technology appraisal guidance 98).

<sup>2</sup> Parent-training/education programmes in the management of children with conduct disorders (NICE technology appraisal guidance 102).

## Person-centred care

This guideline offers best practice advice on the care of children, young people and adults with ADHD.

Treatment and care should take into account people's needs and preferences, and, in the case of children, those of their parents or carers. All people with ADHD, including children, should have the opportunity to be involved in decisions about their care and treatment in partnership with their healthcare professionals. If people do not have the capacity to make decisions, healthcare professionals should follow the Department of Health guidelines – 'Reference guide to consent for examination or treatment' (2001; available from [www.dh.gov.uk](http://www.dh.gov.uk)). Healthcare professionals should also follow a code of practice accompanying the Mental Capacity Act (summary available from [www.publicguardian.gov.uk](http://www.publicguardian.gov.uk)). If the person is under 16, healthcare professionals should follow guidelines in 'Seeking consent: working with children' (available from [www.dh.gov.uk](http://www.dh.gov.uk)).

Good communication between healthcare professionals and people with ADHD is essential. It should be supported by evidence-based written information tailored to the person's needs. Treatment and care, and the information people are given about it, should be culturally appropriate. It should also be accessible to people with additional needs such as physical, sensory or learning disabilities, and to people who do not speak or read English.

If the person agrees, families and carers should have the opportunity to be involved in decisions about treatment and care. Families and carers should also be given the information and support they need, and be encouraged to become involved in interventions where appropriate.

Care of young people in transition between paediatric and adult services should be planned and managed according to the best practice guidance



described in 'Transition: getting it right for young people' (available from [www.dh.gov.uk](http://www.dh.gov.uk)).

Adult and paediatric healthcare teams should work jointly to provide assessment and services to young people with ADHD. Diagnosis and management should be reviewed throughout the transition process, and there should be clarity about who is the lead clinician to ensure continuity of care.

## Key priorities for implementation

- Trusts should ensure that specialist ADHD teams for children, young people and adults jointly develop age-appropriate training programmes for the diagnosis and management of ADHD for mental health, paediatric, social care, education, forensic and primary care providers and other professionals who have contact with people with ADHD.
- For a diagnosis of ADHD, symptoms of hyperactivity/impulsivity and/or inattention should:
  - meet the diagnostic criteria in DSM-IV or ICD-10 (hyperkinetic disorder)<sup>3</sup>  
**and**
  - be associated with at least moderate psychological, social and/or educational or occupational impairment based on interview and/or direct observation in multiple settings, **and**
  - be pervasive, occurring in two or more important settings including social, familial, educational and/or occupational settings.

As part of the diagnostic process, include an assessment of the person's needs, coexisting conditions, social, familial and educational or occupational circumstances and physical health. For children and young people, there should also be an assessment of their parents' or carers' mental health.

- Healthcare professionals should offer parents or carers of pre-school children with ADHD a referral to a parent-training/education programme as the first-line treatment if the parents or carers have not already attended such a programme or the programme has had a limited effect.
- Teachers who have received training about ADHD and its management should provide behavioural interventions in the classroom to help children and young people with ADHD.

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<sup>3</sup> The ICD-10 exclusion on the basis of a pervasive developmental disorder being present, or the time of onset being uncertain, is not recommended.

- If the child or young person with ADHD has moderate levels of impairment, the parents or carers should be offered referral to a group parent-training/education programme, either on its own or together with a group treatment programme (cognitive behavioural therapy [CBT] and/or social skills training) for the child or young person.
- In school-age children and young people with severe ADHD, drug treatment should be offered as the first-line treatment. Parents should also be offered a group-based parent-training/education programme.
- Drug treatment for children and young people with ADHD should always form part of a comprehensive treatment plan that includes psychological, behavioural and educational advice and interventions.
- When a decision has been made to treat children or young people with ADHD with drugs, healthcare professionals should consider:
  - methylphenidate for ADHD without significant comorbidity
  - methylphenidate for ADHD with comorbid conduct disorder
  - methylphenidate or atomoxetine when tics, Tourette's syndrome, anxiety disorder, stimulant misuse or risk of stimulant diversion are present
  - atomoxetine if methylphenidate has been tried and has been ineffective at the maximum tolerated dose, or the child or young person is intolerant to low or moderate doses of methylphenidate.
- Drug treatment for adults with ADHD should always form part of a comprehensive treatment programme that addresses psychological, behavioural and educational or occupational needs.
- Following a decision to start drug treatment in adults with ADHD, methylphenidate should normally be tried first.

# 1 Guidance

The following guidance is based on the best available evidence. The full guideline ([www.nice.org.uk/CG072fullguideline](http://www.nice.org.uk/CG072fullguideline)) gives details of the methods and the evidence used to develop the guidance.

## 1.1 *Prerequisites of treatment and care for all people with ADHD*

People with ADHD require integrated care that addresses a wide range of personal, social, educational and occupational needs. Care should be provided by adequately trained healthcare and education professionals.

### 1.1.1 Organisation and planning of services

People with ADHD would benefit from improved organisation of care and better integration of paediatric, child and adolescent mental health services (CAMHS) and adult mental health services.

1.1.1.1 Mental health trusts, and children's trusts that provide mental health/child development services, should form multidisciplinary specialist ADHD teams and/or clinics for children and young people and separate teams and/or clinics for adults. These teams and clinics should have expertise in the diagnosis and management of ADHD, and should:

- provide diagnostic, treatment and consultation services for people with ADHD who have complex needs, or where general psychiatric services are in doubt about the diagnosis and/or management of ADHD
- put in place systems of communication and protocols for information sharing among paediatric, child and adolescent, forensic, and adult mental health services for people with ADHD,

- including arrangements for transition between child and adult services
- produce local protocols for shared care arrangements with primary care providers, and ensure that clear lines of communication between primary and secondary care are maintained
- ensure age-appropriate psychological services are available for children, young people and adults with ADHD, and for parents or carers.

The size and time commitment of these teams should depend on local circumstances (for example, the size of the trust, the population covered and the estimated referral rate for people with ADHD).

1.1.1.2 Every locality should develop a multi-agency group, with representatives from multidisciplinary specialist ADHD teams, paediatrics, mental health and learning disability trusts, forensic services, child and adolescent mental health services (CAMHS), the Children and Young People's Directorate (CYPD) (including services for education and social services), parent support groups and others with a significant local involvement in ADHD services. The group should:

- oversee the implementation of this guideline
- start and coordinate local training initiatives, including the provision of training and information for teachers about the characteristics of ADHD and its basic behavioural management
- oversee the development and coordination of parent-training/education programmes

- consider compiling a comprehensive directory of information and services for ADHD including advice on how to contact relevant services and assist in the development of specialist teams.

### **1.1.2 Information, consent, the law and support for people with ADHD and their carers**

Many people with ADHD, and their parents or carers, experience stigma and other difficulties because of the symptoms and impairment associated with ADHD and current practice within healthcare and education. The following recommendations have been developed based on the experiences of people with ADHD and their families.

1.1.2.1 Healthcare professionals should develop a trusting relationship with people with ADHD and their families or carers by:

- respecting the person and their family's knowledge and experience of ADHD
- being sensitive to stigma in relation to mental illness.

1.1.2.2 Healthcare professionals should provide people with ADHD and their families or carers with relevant, age-appropriate information (including written information) about ADHD at every stage of their care. The information should cover diagnosis and assessment, support and self-help, psychological treatment, and the use and possible side effects of drug treatment.

1.1.2.3 When assessing a child or young person with ADHD, and throughout their care, healthcare professionals should:

- allow the child or young person to give their own account of how they feel, and record this in the notes
- involve the child or young person and the family or carer in treatment decisions

- take into account expectations of treatment, so that informed consent can be obtained from the child's parent or carer or the young person before treatment is started.

1.1.2.4 Healthcare professionals working with children and young people with ADHD should be:

- familiar with local and national guidelines on confidentiality and the rights of the child
- able to assess the young person's understanding of issues related to ADHD and its treatment (including Gillick competence)
- familiar with parental consent and responsibilities, child protection issues, the Mental Health Act (2007) and the Children Act (1989).

1.1.2.5 Healthcare professionals should work with children and young people with ADHD and their parents or carers to anticipate major life changes (such as puberty, starting or changing schools, the birth of a sibling) and make appropriate arrangements for adequate personal and social support during times of increased need. The need for psychological treatment at these times should be considered.

1.1.2.6 Adults with ADHD should be given written information about local and national support groups and voluntary organisations.

1.1.2.7 Healthcare professionals should ask families or carers about the impact of ADHD on themselves and other family members, and discuss any concerns they may have. Healthcare professionals should:

- offer family members or carers an assessment of their personal, social and mental health needs

- encourage participation in self-help and support groups where appropriate
- offer general advice to parents and carers about positive parent– and carer–child contact, clear and appropriate rules about behaviour, and the importance of structure in the child or young person’s day
- explain that parent-training/education programmes do not necessarily imply bad parenting, and that their aim is to optimise parenting skills to meet the above-average parenting needs of children and young people with ADHD.

### **1.1.3 Training**

Healthcare and education professionals require training to better address the needs of people with ADHD.

- 1.1.3.1 Trusts should ensure that specialist ADHD teams for children, young people and adults jointly develop age-appropriate training programmes for the diagnosis and management of ADHD for mental health, paediatric, social care, education, forensic and primary care providers and other professionals who have contact with people with ADHD.
- 1.1.3.2 Child and adult psychiatrists, paediatricians, and other child and adult mental health professionals (including those working in forensic services) should undertake training so that they are able to diagnose ADHD and provide treatment and management in accordance with this guideline.
- 1.1.3.3 The Department for Children, Schools and Families should consider providing more education to trainee teachers about ADHD by working with the Training and Development Agency for Schools (TDA) and relevant health service organisations to produce training programmes and guidance for supporting children with ADHD.



## **Care pathway for the treatment and care of people with ADHD**

The recommendations in sections 1.2–1.7 form a care pathway that sets out how children, young people and adults should receive help, treatment and care from different services, from the community (including primary care and education), through to secondary and tertiary services. Most of the recommendations in sections 1.2–1.5 describe the approach for children but some of these also apply to adults. The pathway also covers transition between child and adult services (section 1.6) and specific treatment for adults (section 1.7), including those who were first diagnosed with ADHD in adulthood.

Specific recommendations on the use of drugs, monitoring side effects, improving adherence and discontinuing drug treatment are in section 1.8.

### **1.2      *Identification, pre-diagnostic intervention in the community and referral to secondary services***

Children and young people with behavioural problems suggestive of ADHD can be referred by their school or primary care practitioner for parent-training/education programmes without a formal diagnosis of ADHD. The diagnosis of ADHD in children, young people and adults should take place in secondary care.

#### **1.2.1      Identification and referral in children and young people with ADHD**

- 1.2.1.1      Universal screening for ADHD should not be undertaken in nursery, primary and secondary schools.
- 1.2.1.2      When a child or young person with disordered conduct and suspected ADHD is referred to a school's special educational needs coordinator (SENCO), the SENCO, in addition to helping the

child with their behaviour, should inform the parents about local parent-training/education programmes.

1.2.1.3 Referral from the community to secondary care may involve health, education and social care professionals (for example, GPs, paediatricians, educational psychologists, SENCOs, social workers) and care pathways can vary locally. The person making the referral to secondary care should inform the child or young person's GP.

1.2.1.4 When a child or young person presents in primary care with behavioural and/or attention problems suggestive of ADHD, primary care practitioners should determine the severity of the problems, how these affect the child or young person and the parents or carers and the extent to which they pervade different domains and settings.

1.2.1.5 If the child or young person's behavioural and/or attention problems suggestive of ADHD are having an adverse impact on their development or family life, healthcare professionals should consider:

- a period of watchful waiting of up to 10 weeks
- offering parents or carers a referral to a parent-training/education programme (this should not wait for a formal diagnosis of ADHD).

If the behavioural and/or attention problems persist with at least moderate impairment, the child or young person should be referred to secondary care (that is, a child psychiatrist, paediatrician, or specialist ADHD CAMHS) for assessment.

1.2.1.6 If the child or young person's behavioural and/or attention problems are associated with severe impairment, referral should be made

directly to secondary care (that is, a child psychiatrist, paediatrician, or specialist ADHD CAMHS) for assessment.

- 1.2.1.7 Group-based parent-training/education programmes are recommended in the management of children with conduct disorders<sup>4</sup>.
- 1.2.1.8 Primary care practitioners should not make the initial diagnosis or start drug treatment in children or young people with suspected ADHD.
- 1.2.1.9 A child or young person who is currently treated in primary care with methylphenidate, atomoxetine, dexamfetamine, or any other psychotropic drug for a presumptive diagnosis of ADHD, but has not yet been assessed by a specialist in ADHD in secondary care, should be referred for assessment to a child psychiatrist, paediatrician, or specialist ADHD CAMHS as a matter of clinical priority.

## **1.2.2 Identification and referral in adults with ADHD**

- 1.2.2.1 Adults presenting with symptoms of ADHD in primary care or general adult psychiatric services, who do not have a childhood diagnosis of ADHD, should be referred for assessment by a mental health specialist trained in the diagnosis and treatment of ADHD, where there is evidence of typical manifestations of ADHD (hyperactivity/impulsivity and/or inattention) that:
  - began during childhood and have persisted throughout life
  - are not explained by other psychiatric diagnoses (although there may be other coexisting psychiatric conditions)

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<sup>4</sup> This recommendation is taken from 'Parent-training/education programmes in the management of children with conduct disorders' (NICE technology appraisal guidance 102). See recommendation 1.5.1.4 for the extended use of these programmes to include children with ADHD.

- have resulted in or are associated with moderate or severe psychological, social and/or educational or occupational impairment.

1.2.2.2 Adults who have previously been treated for ADHD as children or young people and present with symptoms suggestive of continuing ADHD should be referred to general adult psychiatric services for assessment. The symptoms should be associated with at least moderate or severe psychological and/or social or educational or occupational impairment.

### **1.3      *Diagnosis of ADHD***

ADHD is a valid clinical disorder that can be distinguished from coexisting conditions (although it is most commonly comorbid) and the normal spectrum. ADHD differs from the normal spectrum because there are high levels of hyperactivity/impulsivity and/or inattention that result in significant psychological, social and/or educational or occupational impairment that occurs across multiple domains and settings and persists over time.

1.3.1.1 A diagnosis of ADHD should only be made by a specialist psychiatrist, paediatrician or other appropriately qualified healthcare professional with training and expertise in the diagnosis of ADHD, on the basis of:

- a full clinical and psychosocial assessment of the person; this should include discussion about behaviour and symptoms in the different domains and settings of the person's everyday life, and
- a full developmental and psychiatric history, and
- observer reports and assessment of the person's mental state.

1.3.1.2 A diagnosis of ADHD should not be made solely on the basis of rating scale or observational data. However rating scales such as the Conners' rating scales and the Strengths and Difficulties

1.3.1.3 For a diagnosis of ADHD, symptoms of hyperactivity/impulsivity and/or inattention should:

- meet the diagnostic criteria in DSM-IV or ICD-10 (hyperkinetic disorder),<sup>5</sup> **and**
- be associated with at least moderate psychological, social and/or educational or occupational impairment based on interview and/or direct observation in multiple settings, **and**
- be pervasive, occurring in two or more important settings including social, familial, educational and/or occupational settings.

As part of the diagnostic process, include an assessment of the person's needs, coexisting conditions, social, familial and educational or occupational circumstances and physical health. For children and young people, there should also be an assessment of their parents' or carers' mental health.

1.3.1.4 ADHD should be considered in all age groups, with symptom criteria adjusted for age-appropriate changes in behaviour.

1.3.1.5 In determining the clinical significance of impairment resulting from the symptoms of ADHD in children and young people, their views should be taken into account wherever possible.

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<sup>5</sup> The ICD-10 exclusion on the basis of a pervasive developmental disorder being present, or the time of onset being uncertain, is not recommended.

## **1.4      *Post-diagnostic advice***

After diagnosis people with ADHD and their parents or carers may benefit from advice about diet, behaviour and general care.

### **1.4.1      General advice**

1.4.1.1      Following a diagnosis of ADHD, healthcare professionals should consider providing all parents or carers of all children and young people with ADHD self-instruction manuals, and other materials such as videos, based on positive parenting and behavioural techniques.

### **1.4.2      Dietary advice**

1.4.2.1      Healthcare professionals should stress the value of a balanced diet, good nutrition and regular exercise for children, young people and adults with ADHD.

1.4.2.2      The elimination of artificial colouring and additives from the diet is not recommended as a generally applicable treatment for children and young people with ADHD.

1.4.2.3      Clinical assessment of ADHD in children and young people should include asking about foods or drinks that appear to influence their hyperactive behaviour. If there is a clear link, healthcare professionals should advise parents or carers to keep a diary of food and drinks taken and ADHD behaviour. If the diary supports a relationship between specific foods and drinks and behaviour, then referral to a dietitian should be offered. Further management (for example, specific dietary elimination) should be jointly undertaken by the dietitian, mental health specialist or paediatrician, and the parent or carer and child or young person.

1.4.2.4      Dietary fatty acid supplementation is not recommended for the treatment of ADHD in children and young people.

## **1.5      *Treatment for children and young people***

### **1.5.1      Treatment for pre-school children**

Parent-training/education programmes are the first-line treatment for parents or carers of pre-school children. These programmes are the same as those recommended for the parents or carers of other children with conduct disorder. If more help is needed the child can be referred to a tertiary service.

1.5.1.1      Drug treatment is not recommended for pre-school children with ADHD.

1.5.1.2      Following a diagnosis of ADHD in a child of pre-school age, healthcare professionals should, with the parents' or carers' consent, contact the child's nursery or pre-school teacher to explain:

- the diagnosis and severity of symptoms and impairment
- the care plan
- any special educational needs.

1.5.1.3      Healthcare professionals should offer parents or carers of pre-school children with ADHD a referral to a parent-training/education programme as the first-line treatment if the parents or carers have not already attended such a programme or the programme has had a limited effect.

1.5.1.4      Group-based parent-training/education programmes, developed for the treatment and management of children with conduct disorders<sup>6</sup>, should be fully accessible to parents or carers of children with ADHD whether or not the child also has a formal diagnosis of conduct disorder.

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<sup>6</sup> As recommended in 'Parent-training/education programmes in the management of children with conduct disorders' (NICE technology appraisal guidance 102).

- 1.5.1.5 Individual-based parent-training/education programmes<sup>7</sup> are recommended in the management of children with ADHD when:
- a group programme is not possible because of low participant numbers
  - there are particular difficulties for families in attending group sessions (for example, because of disability, needs related to diversity such as language differences, parental ill-health, problems with transport, or where other factors suggest poor prospects for therapeutic engagement)
  - a family's needs are too complex to be met by group-based parent-training/education programmes.
- 1.5.1.6 When individual-based parent-training/education programmes for pre-school children with ADHD are undertaken, the skills training stages should involve both the parents or carers and the child.
- 1.5.1.7 It is recommended that all parent-training/education programmes, whether group- or individual-based, should:
- be structured and have a curriculum informed by principles of social-learning theory
  - include relationship-enhancing strategies
  - offer a sufficient number of sessions, with an optimum of 8–12, to maximise the possible benefits for participants
  - enable parents to identify their own parenting objectives
  - incorporate role-play during sessions, as well as homework to be undertaken between sessions, to achieve generalisation of newly rehearsed behaviours to the home situation
  - be delivered by appropriately trained and skilled facilitators who are supervised, have access to necessary ongoing professional

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<sup>7</sup> As recommended in 'Parent-training/education programmes in the management of children with conduct disorders' (NICE technology appraisal guidance 102).



development, and are able to engage in a productive therapeutic alliance with parents

- adhere to the programme developer's manual and employ all of the necessary materials to ensure consistent implementation of the programme<sup>8</sup>.

1.5.1.8 Consideration should be given to involving both of the parents or all carers of children or young people with ADHD in parent-training/education programmes wherever this is feasible.

1.5.1.9 Programmes should demonstrate proven effectiveness. This should be based on evidence from randomised controlled trials or other suitable rigorous evaluation methods undertaken independently<sup>8</sup>.

1.5.1.10 Programme providers should also ensure that support is available to enable the participation of parents who might otherwise find it difficult to access these programmes<sup>8</sup>.

1.5.1.11 If overall treatment, including parent-training/education programmes, has been effective in managing ADHD symptoms and any associated impairment in pre-school children, before considering discharge from secondary care healthcare professionals should:

- review the child, with their parents or carers and siblings, for any residual coexisting conditions and develop a treatment plan for these if needed
- monitor for the recurrence of ADHD symptoms and any associated impairment that may occur after the child starts school.

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<sup>8</sup> This recommendation is taken from 'Parent-training/education programmes in the management of children with conduct disorders' (NICE technology appraisal guidance 102).

- 1.5.1.12 If overall treatment, including parent-training/education programmes, has not been effective in managing ADHD symptoms and any associated impairment in pre-school children, healthcare professionals should consider referral to tertiary services for further care.

## **1.5.2 Treatment for school-age children and young people with ADHD and moderate impairment**

Group-based parent-training/education programmes are usually the first-line treatment for parents and carers of children and young people of school age with ADHD and moderate impairment. This may also include group psychological treatment (cognitive behavioural therapy [CBT] and/or social skills training) for the younger child. For older age groups, individual psychological treatment may be more acceptable if group behavioural or psychological approaches have not been effective, or have been refused. See section 1.5.1 for recommendations on conducting parent-training/education programmes that also apply to school-age children with ADHD. Drug treatment may be tried next for those children and young people with ADHD and moderate levels of impairment.

- 1.5.2.1 Drug treatment is not indicated as the first-line treatment for all school-age children and young people with ADHD. It should be reserved for those with severe symptoms and impairment or for those with moderate levels of impairment who have refused non-drug interventions, or whose symptoms have not responded sufficiently to parent-training/education programmes or group psychological treatment.
- 1.5.2.2 Following a diagnosis of ADHD in a school-age child or young person healthcare professionals should, with the parents' or carers' consent, contact the child or young person's teacher to explain:
- the diagnosis and severity of symptoms and impairment

- the care plan
- any special educational needs.

- 1.5.2.3 Teachers who have received training about ADHD and its management should provide behavioural interventions in the classroom to help children and young people with ADHD.
- 1.5.2.4 If the child or young person with ADHD has moderate levels of impairment, the parents or carers should be offered referral to a group parent-training/education programme, either on its own or together with a group treatment programme (CBT and/or social skills training) for the child or young person.
- 1.5.2.5 When using group treatment (CBT and/or social skills training) for the child or young person in conjunction with a parent-training/education programme, particular emphasis should be given to targeting a range of areas, including social skills with peers, problem solving, self-control, listening skills and dealing with and expressing feelings. Active learning strategies should be used, and rewards given for achieving key elements of learning.
- 1.5.2.6 For older adolescents with ADHD and moderate impairment, individual psychological interventions (such as CBT or social skills training) may be considered as they may be more effective and acceptable than group parent-training/education programmes or group CBT and/or social skills training.
- 1.5.2.7 For children and young people (including older age groups) with ADHD and a learning disability, a parent-training/education programme should be offered on either a group or individual basis, whichever is preferred following discussion with the parents or carers and the child or young person.

- 1.5.2.8 When parents or carers of children or young people with ADHD undertake parent-training/education programmes, the professional delivering the sessions should consider contacting the school and providing the child or young person's teacher with written information on the areas of behavioural management covered in these sessions. This should only be done with parental consent.
- 1.5.2.9 Following successful treatment with a parent-training/education programme and before considering discharge from secondary care, the child or young person should be reviewed, with their parents or carers and siblings, for any residual problems such as anxiety, aggression or learning difficulties. Treatment plans should be developed for any coexisting conditions.
- 1.5.2.10 Following treatment with a parent-training/education programme, children and young people with ADHD and persisting significant impairment should be offered drug treatment.

### **1.5.3 Treatment for school-age children and young people with severe ADHD (hyperkinetic disorder) and severe impairment**

The first-line treatment for school-age children and young people with severe ADHD (hyperkinetic disorder) and severe impairment is drug treatment. If the child or young person wishes to refuse medication and/or the parents or carers reject it, a psychological intervention may be tried but drug treatment has more benefits and is superior to other treatments for this group.

- 1.5.3.1 In school-age children and young people with severe ADHD, drug treatment should be offered as the first-line treatment. Parents should also be offered a group-based parent-training/education programme.

- 1.5.3.2 Drug treatment should only be initiated by an appropriately qualified healthcare professional with expertise in ADHD and should be based on a comprehensive assessment and diagnosis. Continued prescribing and monitoring of drug therapy may be performed by general practitioners, under shared care arrangements<sup>9</sup>.
- 1.5.3.3 If drug treatment is not accepted by the child or young person with severe ADHD, or their parents or carers, healthcare professionals should advise parents or carers and the child or young person about the benefits and superiority of drug treatment in this group. If drug treatment is still not accepted, a group parent-training/education programme should be offered.
- 1.5.3.4 If a group parent-training/education programme is effective in children and young people with severe ADHD who have refused drug treatment, healthcare professionals should assess the child or young person for possible coexisting conditions and develop a longer-term care plan.
- 1.5.3.5 If a group parent-training/education programme is not effective for a child or young person with severe ADHD, and if drug treatment has not been accepted, discuss the possibility of drug treatment again or other psychological treatment (group CBT and/or social skills training), highlighting the clear benefits and superiority of drug treatment in children or young people with severe ADHD.
- 1.5.3.6 Following a diagnosis of severe ADHD in a school-age child or young person healthcare professionals should, with the parents' or

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<sup>9</sup> This recommendation is taken from 'Methylphenidate, atomoxetine and dexamfetamine for attention deficit hyperactivity disorder (ADHD) in children and adolescents' (NICE technology appraisal 98). At the time of publication (September 2008), methylphenidate and atomoxetine did not have UK marketing authorisation for use in children younger than 6 years. Informed consent should be obtained and documented.

carers' consent, contact the child or young person's teacher to explain:

- the diagnosis and severity of symptoms and impairment
- the care plan
- any special educational needs.

1.5.3.7 Teachers who have received training about ADHD and its management should provide behavioural interventions in the classroom to help children and young people with ADHD.

#### **1.5.4 Pre-drug treatment assessment**

It is important that before starting drug treatment baseline measures of a range of parameters, including height and weight, are taken.

1.5.4.1 Before starting drug treatment, children and young people with ADHD should have a full pre-treatment assessment, which should include:

- full mental health and social assessment
- full history and physical examination, including:
  - assessment of history of exercise syncope, undue breathlessness and other cardiovascular symptoms
  - heart rate and blood pressure (plotted on a centile chart)
  - height and weight (plotted on a growth chart)
  - family history of cardiac disease and examination of the cardiovascular system
- an electrocardiogram (ECG) if there is past medical or family history of serious cardiac disease, a history of sudden death in young family members or abnormal findings on cardiac examination
- risk assessment for substance misuse and drug diversion (where the drug is passed on to others for non-prescription use).

- 1.5.4.2 Drug treatment for children and young people with ADHD should always form part of a comprehensive treatment plan that includes psychological, behavioural and educational advice and interventions.

### **1.5.5 Choice of drug for children and young people with ADHD**

Depending on a range of factors such as the presence of coexisting conditions, side effects and patient preference, the child or young person may be offered methylphenidate, atomoxetine or dexamfetamine.

- 1.5.5.1 Where drug treatment is considered appropriate, methylphenidate, atomoxetine and dexamfetamine are recommended, within their licensed indications, as options for the management of ADHD in children and adolescents<sup>10</sup>.
- 1.5.5.2 The decision regarding which product to use should be based on the following:
- the presence of comorbid conditions (for example, tic disorders, Tourette's syndrome, epilepsy)
  - the different adverse effects of the drugs
  - specific issues regarding compliance identified for the individual child or adolescent, for example problems created by the need to administer a mid-day treatment dose at school
  - the potential for drug diversion (where the medication is forwarded on to others for non-prescription uses) and/or misuse
  - the preferences of the child/adolescent and/or his or her parent or guardian<sup>10</sup>.

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<sup>10</sup> This recommendation is taken from 'Methylphenidate, atomoxetine and dexamfetamine for attention deficit hyperactivity disorder (ADHD) in children and adolescents' (NICE technology appraisal guidance 98). At the time of publication (September 2008), methylphenidate and atomoxetine did not have UK marketing authorisation for use in children younger than 6 years. Informed consent should be obtained and documented.

- 1.5.5.3 When a decision has been made to treat children or young people with ADHD with drugs, healthcare professionals should consider:
- methylphenidate for ADHD without significant comorbidity
  - methylphenidate for ADHD with comorbid conduct disorder
  - methylphenidate or atomoxetine when tics, Tourette's syndrome, anxiety disorder, stimulant misuse or risk of stimulant diversion are present
  - atomoxetine if methylphenidate has been tried and has been ineffective at the maximum tolerated dose, or the child or young person is intolerant to low or moderate doses of methylphenidate.
- 1.5.5.4 When prescribing methylphenidate for the treatment of children or young people, modified-release preparations should be considered for the following reasons:
- convenience
  - improving adherence
  - reducing stigma (because the child or young person does not need to take medication at school)
  - reducing problems schools have in storing and administering controlled drugs
  - their pharmacokinetic profiles.
- Alternatively, immediate-release preparations may be considered if more flexible dosing regimens are required, or during initial titration to determine correct dosing levels.
- 1.5.5.5 When starting drug treatment children and young people should be monitored for side effects. In particular, those treated with atomoxetine should be closely observed for agitation, irritability, suicidal thinking and self-harming behaviour, and unusual changes



1.5.5.6 If there is a choice of more than one appropriate drug, the product with the lowest cost (taking into account the cost per dose and number of daily doses) should be prescribed<sup>11</sup>.

1.5.5.7 Antipsychotics are not recommended for the treatment of ADHD in children and young people.

### **1.5.6 Poor response to treatment**

If there has been a poor response to parent-training/education programmes, psychological treatment and drug treatment with methylphenidate and atomoxetine, a comprehensive review is required. The following are further options for treatment: higher doses of methylphenidate or atomoxetine; switching to dexamfetamine; further or alternative psychological treatments; or referral to regional specialists for alternative drug treatment.

1.5.6.1 If there has been a poor response following parent-training/education programmes and/or psychological treatment and treatment with methylphenidate and atomoxetine in a child or young person with ADHD, there should be a further review of:

- the diagnosis

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<sup>11</sup> This recommendation is taken from 'Methylphenidate, atomoxetine and dexamfetamine for attention deficit hyperactivity disorder (ADHD) in children and adolescents' (NICE technology appraisal 98). At the time of publication (September 2008), methylphenidate and atomoxetine did not have UK marketing authorisation for use in children younger than 6 years. Informed consent should be obtained and documented.

- any coexisting conditions
- response to drug treatment, occurrence of side effects and treatment adherence
- uptake and use of psychological interventions for the child or young person and their parents or carers
- effects of stigma on treatment acceptability
- concerns related to school and/or family
- motivation of the child or young person and the parents or carers
- the child or young person's diet.

1.5.6.2 Following review of poor response to treatment, a dose higher than that licensed for methylphenidate or atomoxetine should be considered following consultation with a tertiary or regional centre. This may exceed 'British national formulary' (BNF) recommendations: methylphenidate can be increased to 0.7 mg/kg per dose up to three times a day or a total daily dose of 2.1 mg/kg/day (up to a total maximum dose of 90 mg/day for immediate release; or an equivalent dose of modified-release methylphenidate)<sup>12</sup>; atomoxetine may be increased to 1.8 mg/kg/day (up to a total maximum dose of 120 mg/day). The prescriber should closely monitor the child or young person for side effects.

<sup>12</sup> Stimulant dose equivalents (mg)

IR-MPH	Concerta XL	Equasym XL	Medikinet XL
10	-	10	10
15	18	-	-
20	-	20	20
30	36	30	30
-	-	-	40
45	54	-	-
60	72*	60	-

IR-MPH: immediate-release methylphenidate; Concerta XL, Equasym XL and Medikinet XL: brands of modified-release methylphenidate

\* Licensed up to 54 mg

- 1.5.6.3 Dexamfetamine should be considered in children and young people whose ADHD is unresponsive to a maximum tolerated dose of methylphenidate or atomoxetine.
- 1.5.6.4 In children and young people whose ADHD is unresponsive to methylphenidate, atomoxetine and dexamfetamine, further treatment should only follow after referral to tertiary services. Further treatment may include the use of medication unlicensed for the treatment of ADHD (such as bupropion, clonidine, modafinil and imipramine)<sup>13</sup> or combination treatments (including psychological treatments for the parent or carer and the child or young person). The use of medication unlicensed for ADHD should only be considered in the context of tertiary services.
- 1.5.6.5 A cardiovascular examination and ECG should be carried out before starting treatment with clonidine in children or young people with ADHD.

## **1.6 Transition to adult services**

Young people with ADHD receiving treatment and care from CAMHS or paediatric services should normally be transferred to adult services if they continue to have significant symptoms of ADHD or other coexisting conditions that require treatment. Transition should be planned in advance by both referring and receiving services. If needs are severe and/or complex, use of the care programme approach should be considered.

- 1.6.1.1 A young person with ADHD receiving treatment and care from CAMHS or paediatric services should be reassessed at school-leaving age to establish the need for continuing treatment into adulthood. If treatment is necessary, arrangements should be

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<sup>13</sup> At the time of publication (September 2008), bupropion, clonidine, modafinil and imipramine did not have UK marketing authorisation for use in children and young people with ADHD. Informed consent should be obtained and documented.

made for a smooth transition to adult services with details of the anticipated treatment and services that the young person will require. Precise timing of arrangements may vary locally but should usually be completed by the time the young person is 18 years.

- 1.6.1.2 During the transition to adult services, a formal meeting involving CAMHS and/or paediatrics and adult psychiatric services should be considered, and full information provided to the young person about adult services. For young people aged 16 years and older, the care programme approach (CPA) should be used as an aid to transfer between services. The young person, and when appropriate the parent or carer, should be involved in the planning.
- 1.6.1.3 After transition to adult services, adult healthcare professionals should carry out a comprehensive assessment of the person with ADHD that includes personal, educational, occupational and social functioning, and assessment of any coexisting conditions, especially drug misuse, personality disorders, emotional problems and learning difficulties.

## **1.7      *Treatment of adults with ADHD***

Drug treatment is the first-line treatment for adults with ADHD with either moderate or severe levels of impairment. Methylphenidate is the first-line drug. Psychological interventions without medication may be effective for some adults with moderate impairment, but there are insufficient data to support this recommendation. If methylphenidate is ineffective or unacceptable, atomoxetine or dexamfetamine can be tried. If there is residual impairment despite some benefit from drug treatment, or there is no response to drug treatment, CBT may be considered. There is the potential for drug misuse and diversion in adults with ADHD, especially in some settings, such as prison, although there is no strong evidence that this is a significant problem.

- 1.7.1.1 For adults with ADHD, drug treatment<sup>14</sup> should be the first-line treatment unless the person would prefer a psychological approach.
- 1.7.1.2 Drug treatment for adults with ADHD should be started only under the guidance of a psychiatrist, nurse prescriber specialising in ADHD, or other clinical prescriber with training in the diagnosis and management of ADHD.
- 1.7.1.3 Before starting drug treatment for adults with ADHD a full assessment should be completed, which should include:
- full mental health and social assessment
  - full history and physical examination, including:
    - assessment of history of exercise syncope, undue breathlessness and other cardiovascular symptoms
    - heart rate and blood pressure (plotted on a centile chart)
    - weight
    - family history of cardiac disease and examination of the cardiovascular system
  - an ECG if there is past medical or family history of serious cardiac disease, a history of sudden death in young family members or abnormal findings on cardiac examination
  - risk assessment for substance misuse and drug diversion.
- 1.7.1.4 Drug treatment for adults with ADHD should always form part of a comprehensive treatment programme that addresses psychological, behavioural and educational or occupational needs.

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<sup>14</sup> At the time of publication (September 2008), methylphenidate, dexamfetamine and atomoxetine did not have UK marketing authorisation for use in adults with ADHD. However atomoxetine is licensed for adults with ADHD when the drug has been started in childhood. Informed consent should be obtained and documented.

- 1.7.1.5 Following a decision to start drug treatment in adults with ADHD, methylphenidate should normally be tried first.
- 1.7.1.6 Atomoxetine or dexamfetamine should be considered in adults unresponsive or intolerant to an adequate trial of methylphenidate (this should usually be about 6 weeks)<sup>15</sup>. Caution should be exercised when prescribing dexamfetamine to those likely to be at risk of stimulant misuse or diversion.
- 1.7.1.7 When starting drug treatment, adults should be monitored for side effects. In particular, people treated with atomoxetine should be observed for agitation, irritability, suicidal thinking and self-harming behaviour, and unusual changes in behaviour, particularly during the initial months of treatment, or after a change in dose. They should also be warned of potential liver damage in rare cases (usually presenting as abdominal pain, unexplained nausea, malaise, darkening of the urine or jaundice). Younger adults aged 30 years or younger should also be warned of the potential of atomoxetine to increase agitation, anxiety, suicidal thinking and self-harming behaviour in some people, especially during the first few weeks of treatment.
- 1.7.1.8 For adults with ADHD stabilised on medication but with persisting functional impairment associated with the disorder, or where there has been no response to drug treatment, a course of either group or individual CBT to address the person's functional impairment should be considered. Group therapy is recommended as the first-line psychological treatment because it is the most cost effective.

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<sup>15</sup> At the time of publication (September 2008), methylphenidate, dexamfetamine and atomoxetine did not have UK marketing authorisation for use in adults with ADHD. However atomoxetine is licensed for adults with ADHD when the drug has been started in childhood. Informed consent should be obtained and documented.

1.7.1.9 For adults with ADHD, CBT may be considered when:

- the person has made an informed choice not to have drug treatment
- drug treatment has proved to be only partially effective or ineffective or the person is intolerant to it
- people have difficulty accepting the diagnosis of ADHD and accepting and adhering to drug treatment
- symptoms are remitting and psychological treatment is considered sufficient to target residual (mild to moderate) functional impairment.

1.7.1.10 Where there may be concern about the potential for drug misuse and diversion (for example, in prison services), atomoxetine may be considered as the first-line drug treatment for ADHD in adults<sup>16</sup>.

1.7.1.11 Drug treatment for adults with ADHD who also misuse substances should only be prescribed by an appropriately qualified healthcare professional with expertise in managing both ADHD and substance misuse. For adults with ADHD and drug or alcohol addiction disorders there should be close liaison between the professional treating the person's ADHD and an addiction specialist.

1.7.1.12 Antipsychotics are not recommended for the treatment of ADHD in adults.

## **1.8      *How to use drugs for the treatment of ADHD***

Good knowledge of the drugs used in the treatment of ADHD and their different preparations is essential (refer to the BNF and summaries of product characteristics). It is important to start with low doses and titrate upwards,

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<sup>16</sup> At the time of publication (September 2008), methylphenidate, dexamfetamine and atomoxetine did not have UK marketing authorisation for use in adults with ADHD. However atomoxetine is licensed for adults with ADHD when the drug has been started in childhood. Informed consent should be obtained and documented.

monitoring effects and side effects carefully. Higher doses may need to be prescribed to some adults. The recommendations on improving adherence in children and young people may also be of use in adults.

### **1.8.1 General principles**

- 1.8.1.1 Prescribers should be familiar with the pharmacokinetic profiles of all the modified-release and immediate-release preparations available for ADHD to ensure that treatment is tailored effectively to the individual needs of the child, young person or adult.
- 1.8.1.2 Prescribers should be familiar with the requirements of controlled drug legislation governing the prescription and supply of stimulants.
- 1.8.1.3 During the titration phase, doses should be gradually increased until there is no further clinical improvement in ADHD (that is, symptom reduction, behaviour change, improvements in education and/or relationships) and side effects are tolerable.
- 1.8.1.4 Following titration and dose stabilisation, prescribing and monitoring should be carried out under locally agreed shared care arrangements with primary care.
- 1.8.1.5 Side effects resulting from drug treatment for ADHD should be routinely monitored and documented in the person's notes.
- 1.8.1.6 If side effects become troublesome in people receiving drug treatment for ADHD, a reduction in dose should be considered.
- 1.8.1.7 Healthcare professionals should be aware that dose titration should be slower if tics or seizures are present in people with ADHD.



## **1.8.2 Initiation and titration of methylphenidate, atomoxetine and dexamfetamine in children and young people**

1.8.2.1 During the titration phase, symptoms and side effects should be recorded at each dose change on standard scales (for example, Conners' 10-item scale) by parents and teachers, and progress reviewed regularly (for example, by weekly telephone contact and at each dose change) with a specialist clinician.

1.8.2.2 If using methylphenidate in children and young people with ADHD aged 6 years and older:

- initial treatment should begin with low doses of immediate-release or modified-release preparations consistent with starting doses in the BNF
- the dose should be titrated against symptoms and side effects over 4–6 weeks until dose optimisation is achieved
- modified-release preparations should be given as a single dose in the morning
- immediate-release preparations should be given in two or three divided doses.

1.8.2.3 If using atomoxetine in children and young people with ADHD aged 6 years and older:

- for those weighing up to 70 kg, the initial total daily dose should be approximately 0.5 mg/kg; the dose should be increased after 7 days to approximately 1.2 mg/kg/day
- for those weighing more than 70 kg, the initial total daily dose should be 40 mg; the dose should be increased after 7 days up to a maintenance dose of 80 mg/day
- a single daily dose can be given; two divided doses may be prescribed to minimise side effects.

1.8.2.4 If using dexamfetamine in children and young people with ADHD:

- initial treatment should begin with low doses consistent with starting doses in the BNF
- the dose should be titrated against symptoms and side effects over 4–6 weeks
- treatment should be given in divided doses increasing to a maximum of 20 mg/day
- for children aged 6–18 years, doses up to 40 mg/day may occasionally be required.

### **1.8.3 Initiation and titration of methylphenidate, atomoxetine and dexamfetamine in adults**

1.8.3.1 In order to optimise drug treatment, the initial dose should be titrated against symptoms and side effects over 4–6 weeks.

1.8.3.2 During the titration phase, symptoms and side effects should be recorded at each dose change by the prescriber after discussion with the person with ADHD and, wherever possible, a carer (for example, a spouse, parent or close friend). Progress should be reviewed (for example, by weekly telephone contact and at each dose change) with a specialist clinician.

1.8.3.3 If using methylphenidate in adults with ADHD:

- initial treatment should begin with low doses (5 mg three times daily for immediate-release preparations; the equivalent dose for modified-release preparations)
- the dose should be titrated against symptoms and side effects over 4–6 weeks
- the dose should be increased according to response up to a maximum of 100 mg/day

- modified-release preparations should usually be given once daily and no more than twice daily
- modified-release preparations may be preferred to increase adherence and in circumstances where there are concerns about substance misuse or diversion
- immediate-release preparations should be given up to four times daily.

#### 1.8.3.4 If using atomoxetine in adults with ADHD:

- for people with ADHD weighing up to 70 kg, the initial total daily dose should be approximately 0.5 mg/kg; the dose should be increased after 7 days to approximately 1.2 mg/kg/day
- for people with ADHD weighing more than 70 kg, the initial total daily dose should be 40 mg; the dose should be increased after 7 days up to a maintenance dose of 100 mg/day
- the usual maintenance dose is either 80 or 100 mg, which may be taken in divided doses
- a trial of 6 weeks on a maintenance dose should be allowed to evaluate the full effectiveness of atomoxetine.

#### 1.8.3.5 If using dexamfetamine in adults with ADHD:

- initial treatment should begin with low doses (5 mg twice daily)
- the dose should be titrated against symptoms and side effects over 4–6 weeks
- treatment should be given in divided doses
- the dose should be increased according to response up to a maximum of 60 mg per day
- the dose should usually be given between two and four times daily.

#### **1.8.4 Monitoring side effects and the potential for misuse in children, young people and adults**

1.8.4.1 Healthcare professionals should consider using standard symptom and side effect rating scales throughout the course of treatment as an adjunct to clinical assessment for people with ADHD.

1.8.4.2 In people taking methylphenidate, atomoxetine, or dexamfetamine:

- height should be measured every 6 months in children and young people
- weight should be measured 3 and 6 months after drug treatment has started and every 6 months thereafter in children, young people and adults
- height and weight in children and young people should be plotted on a growth chart and reviewed by the healthcare professional responsible for treatment.

1.8.4.3 If there is evidence of weight loss associated with drug treatment in adults with ADHD, healthcare professionals should consider monitoring body mass index and changing the drug if weight loss persists.

1.8.4.4 Strategies to reduce weight loss in people with ADHD, or manage decreased weight gain in children, include:

- taking medication either with or after food, rather than before meals
- taking additional meals or snacks early in the morning or late in the evening when the stimulant effects of the drug have worn off
- obtaining dietary advice
- consuming high-calorie foods of good nutritional value.

- 1.8.4.5 If growth is significantly affected by drug treatment (that is, the child or young person has not met the height expected for their age), the option of a planned break in treatment over school holidays should be considered to allow 'catch-up' growth to occur.
- 1.8.4.6 In people with ADHD, heart rate and blood pressure should be monitored and recorded on a centile chart before and after each dose change and routinely every 3 months.
- 1.8.4.7 For people taking methylphenidate, dexamfetamine and atomoxetine, routine blood tests and ECGs are not recommended unless there is a clinical indication.
- 1.8.4.8 Liver damage is a rare and idiosyncratic adverse effect of atomoxetine and routine liver function tests are not recommended.
- 1.8.4.9 For children and young people taking methylphenidate and dexamfetamine, healthcare professionals and parents or carers should monitor changes in the potential for drug misuse and diversion, which may come with changes in circumstances and age. In these situations, modified-release methylphenidate or atomoxetine may be preferred.
- 1.8.4.10 In young people and adults, sexual dysfunction (that is, erectile and ejaculatory dysfunction) and dysmenorrhoea should be monitored as potential side effects of atomoxetine.
- 1.8.4.11 For people taking methylphenidate, dexamfetamine or atomoxetine who have sustained resting tachycardia, arrhythmia or systolic blood pressure greater than the 95th percentile (or a clinically significant increase) measured on two occasions should have their dose reduced and be referred to a paediatrician or adult physician.

- 1.8.4.12 If psychotic symptoms (for example, delusions and hallucinations) emerge in children, young people and adults after starting methylphenidate or dexamfetamine, the drug should be withdrawn and a full psychiatric assessment carried out. Atomoxetine should be considered as an alternative.
- 1.8.4.13 If seizures are exacerbated in a child or young person with epilepsy, or de novo seizures emerge following the introduction of methylphenidate or atomoxetine, the drug should be discontinued immediately. Dexamfetamine may be considered as an alternative in consultation with a regional tertiary specialist treatment centre.
- 1.8.4.14 If tics emerge in people taking methylphenidate or dexamfetamine, healthcare professionals should consider whether:
- the tics are stimulant-related (tics naturally wax and wane)
  - tic-related impairment outweighs the benefits of ADHD treatment.
- If tics are stimulant-related, reduce the dose of methylphenidate or dexamfetamine, consider changing to atomoxetine, or stop drug treatment.
- 1.8.4.15 Anxiety symptoms, including panic, may be precipitated by stimulants, particularly in adults with a history of coexisting anxiety. Where this is an issue, lower doses of the stimulant and/or combined treatment with an antidepressant used to treat anxiety can be used; switching to atomoxetine may be effective.

## **1.8.5 Improving adherence to drug treatment**

For children and young people with ADHD, the strategies outlined in the recommendations below should be considered to improve treatment adherence. Similar strategies, adapted for age, may be considered for adults.

- 1.8.5.1 Communication between the prescriber and the child or young person should be improved by educating parents or carers and ensuring there are regular three-way conversations between prescriber, parent or carer and the child or young person. For adults with ADHD, and with their permission, a spouse, partner, parent, close friend or carer wherever possible should be part of these conversations. Clear instructions about how to take the drug should be offered in picture or written format, which may include information on dose, duration, side effects, dosage schedule, the need for supervision and how this should be done.
- 1.8.5.2 Healthcare professionals should consider suggesting peer-support groups for the child or young person with ADHD and their parents or carers if adherence to drug treatment is difficult or uncertain.
- 1.8.5.3 Simple drug regimens (for example, once-daily modified-release doses) are recommended for people with ADHD.
- 1.8.5.4 Healthcare professionals should encourage children and young people with ADHD to be responsible for their own health, including taking their medication as required, and support parents and carers in this endeavour.
- 1.8.5.5 Healthcare professionals should advise parents or carers to provide the child or young person with visual reminders to take medication regularly (for example, alarms, clocks, pill boxes, or notes on calendars or fridges).
- 1.8.5.6 Healthcare professionals should advise children and young people and their parents or carers that taking medication should be incorporated into daily routines (for example, before meals or after brushing teeth).

- 1.8.5.7 Where necessary, healthcare professionals should help parents or carers develop a positive attitude and approach in the management of medication, which might include praise and positive reinforcement for the child or young person with ADHD.

### **1.8.6 Duration, discontinuation and continuity of treatment in children and young people**

It is advisable to review each year whether the child or young person needs to continue drug treatment and to ensure that the long-term pattern of use is tailored to the person's needs, preferences and circumstances.

- 1.8.6.1 Following an adequate treatment response, drug treatment for ADHD should be continued for as long as it remains clinically effective. This should be reviewed at least annually. The review should include a comprehensive assessment of clinical need, benefits and side effects, taking into account the views of the child or young person, as well as those of parents, carers and teachers, and how these views may differ. The effect of missed doses, planned dose reductions and brief periods of no treatment should be taken into account and the preferred pattern of use should also be reviewed. Coexisting conditions should be reviewed, and the child or young person treated or referred if necessary. The need for psychological and social support for the child or young person and for the parents or other carers should be assessed.
- 1.8.6.2 Drug holidays are not routinely recommended; however, consideration should be given to the parent or carer and child or young person with ADHD working with their healthcare professional to find the best pattern of use, which may include periods without drug treatment.



### **1.8.7 Duration, discontinuation and continuity of treatment in adults**

- 1.8.7.1 Following an adequate response, drug treatment for ADHD should be continued for as long as it is clinically effective. This should be reviewed annually. The review should include a comprehensive assessment of clinical need, benefits and side effects, taking into account the views of the person and those of a spouse, partner, parent, close friends or carers wherever possible, and how these accounts may differ. The effect of missed doses, planned dose reductions and brief periods of no treatment should be taken into account and the preferred pattern of use should also be reviewed. Coexisting conditions should be reviewed, and the person treated or referred if necessary. The need for psychological, social and occupational support for the person and their carers should be assessed.
- 1.8.7.2 An individual treatment approach is important for adults, and healthcare professionals should regularly review (at least annually) the need to adapt patterns of use, including the effect of drug treatment on coexisting conditions and mood changes.

## **2 Notes on the scope of the guidance**

NICE guidelines are developed in accordance with a scope that defines what the guideline will and will not cover. The scope of this guideline is available from [www.nice.org.uk/CG072](http://www.nice.org.uk/CG072)

The guideline covers the treatment of children aged 3 years and older, young people and adults with a diagnosis of ADHD and related diagnoses: hyperkinetic disorder (ICD-10); three DSM-IV ADHD subtypes; the management of common comorbidities in children, young people and adults with ADHD as far as these disorders affect the treatment of ADHD; and the

management of ADHD in people who also have a learning disability or a defined neurological disorder.

The guideline does not cover the separate management of comorbidities or the management of children younger than 3 years.

### **How this guideline was developed**

NICE commissioned the National Collaborating Centre for Mental Health to develop this guideline. The Centre established a Guideline Development Group (see appendix A), which reviewed the evidence and developed the recommendations. An independent Guideline Review Panel oversaw the development of the guideline (see appendix B).

There is more information in the booklet: 'The guideline development process: an overview for stakeholders, the public and the NHS' (third edition, published April 2007), which is available from [www.nice.org.uk/guidelinesprocess](http://www.nice.org.uk/guidelinesprocess) or from NICE publications (phone 0845 003 7783 or email [publications@nice.org.uk](mailto:publications@nice.org.uk) and quote reference N1233).

## **3 Implementation**

The Healthcare Commission assesses the performance of NHS organisations in meeting core and developmental standards set by the Department of Health in 'Standards for better health' (available from [www.dh.gov.uk](http://www.dh.gov.uk)).

Implementation of clinical guidelines forms part of the developmental standard D2. Core standard C5 says that national agreed guidance should be taken into account when NHS organisations are planning and delivering care.

NICE has developed tools to help organisations implement this guidance (listed below). These are available on our website ([www.nice.org.uk/CG072](http://www.nice.org.uk/CG072)).

- Slides highlighting key messages for local discussion.
- Costing tools:

- costing report to estimate the national savings and costs associated with implementation
- costing template to estimate the local costs and savings involved.
- Implementation advice on how to put the guidance into practice and national initiatives that support this locally.
- Audit support for monitoring local practice.

## **4 Research recommendations**

The Guideline Development Group has made the following recommendations for research, based on its review of evidence, to improve NICE guidance and patient care in the future. The Guideline Development Group's full set of research recommendations is detailed in the full guideline (see section 5).

### **4.1 *Grounds for diagnosis of ADHD in adults***

What is the prevalence of inattention, impulsivity and hyperactivity/restlessness in males and females in the adult population?

How far do the core symptoms of inattention, impulsivity and hyperactivity/restlessness cluster together?

To what extent are the core symptoms comorbid with other forms of mental disturbance?

To what extent are the core symptoms associated with neuropsychological and social impairment? This would be best conducted as an epidemiological survey.

#### **Why this is important**

There is evidence that ADHD symptoms can persist into adulthood and cause impairment, but there are no clear conclusions about the level of ADHD symptoms in adults that should be considered as grounds for intervention, or whether symptoms take a different form in adulthood. The costs to society and

to the affected people and their families make it pressing to know whether, and how far, services should be expanded to meet the needs of this group.

## **4.2      *Discontinuation of drug treatment***

Are there any benefits or disadvantages to the extended/long-term use of methylphenidate compared with its discontinuation at least 18 months after starting treatment? To what extent does continuing drug treatment beyond 18 months alter quality of life, core ADHD symptoms, associated symptoms including emotional lability, potential adverse effects of continued drug treatment and neuropsychological function? This would be best conducted as a drug discontinuation randomised controlled trial.

### **Why this is important**

Methylphenidate is often given for periods of years without good evidence of whether prolonged therapy is effective or safe. Methylphenidate is also typically discontinued in late adolescence; evidence is required of the benefit of continued prescribing in this age group.

## **4.3      *Effectiveness of group-based parent training***

Are group-based behavioural parent-training/education methods more effective than drug treatment in school-age children and young people with ADHD in terms of symptoms, quality of life and cost effectiveness? This would be best evaluated by a head-to-head randomised controlled trial.

### **Why this is important**

The evidence for the effect of group-based parent-training/education programmes is largely based on studies of younger children. These studies are an important part of the management of ADHD although their cost effectiveness is not clear for older children and adolescents.

#### **4.4      *Effectiveness of non-drug treatments for adults with ADHD***

Are non-drug treatments (including focused psychological treatments and supportive approaches such as coaching) more effective than drug treatment (methylphenidate) in terms of symptoms, quality of life, cost effectiveness, drug misuse and other coexisting conditions, and the cost of health, forensic and criminal justice services, in the treatment of adults with ADHD? This would be best conducted as a randomised controlled trial.

##### **Why this is important**

Currently there is good evidence supporting the effectiveness of methylphenidate in people with ADHD symptoms and associated impairment. However, there is insufficient evidence on whether non-drug treatments could have specific advantages in some important aspects of the life of a person with ADHD. Given the strong association of ADHD in adults with substance misuse, personality disorder and involvement in the criminal justice system, a health economic approach would be essential.

#### **4.5      *Effect of providing training in behavioural management of ADHD for teachers***

Does the training of teachers in the behavioural management of children with ADHD in primary and secondary schools improve ADHD symptoms and academic attainment, the teacher's experience of stress in the classroom and the impact of ADHD on other pupils when compared with current education methods? This would be best conducted as a randomised trial.

##### **Why this is important**

Secondary school is typically a different environment from primary school, particularly in terms of organisation of the daily timetable and expectations of the increasing independence of pupils. These factors may have an adverse impact on young people with ADHD, but the effect of understanding and modifying this impact has not yet been researched. The potential for teachers

to take a more active role in the behavioural management of primary and secondary school children with ADHD shows some significant promise in at least one trial. The benefits of examining primary and secondary education, compared with education as usual, and examining the broader impact on the child, the teacher and the wider classroom, would significantly improve future versions of this guideline.

## **5 Other versions of this guideline**

### **5.1 *Full guideline***

The full guideline, 'Attention deficit hyperactivity disorder: diagnosis and management of ADHD in children, young people and adults', contains details of the methods and evidence used to develop the guideline. It is published by the National Collaborating Centre for Mental Health, and is available from [www.nccmh.org.uk](http://www.nccmh.org.uk), our website ([www.nice.org.uk/CG072fullguideline](http://www.nice.org.uk/CG072fullguideline)) and the National Library for Health ([www.library.nhs.uk](http://www.library.nhs.uk)).

### **5.2 *Quick reference guide***

A quick reference guide for healthcare professionals is available from [www.nice.org.uk/CG072quickrefguide](http://www.nice.org.uk/CG072quickrefguide)

For printed copies, phone NICE publications on 0845 003 7783 or email [publications@nice.org.uk](mailto:publications@nice.org.uk) (quote reference number N1684).

### **5.3 *'Understanding NICE guidance'***

Information for patients and carers ('Understanding NICE guidance') is available from [www.nice.org.uk/CG072publicinfo](http://www.nice.org.uk/CG072publicinfo)

For printed copies, phone NICE publications on 0845 003 7783 or email [publications@nice.org.uk](mailto:publications@nice.org.uk) (quote reference number N1685).

We encourage NHS and voluntary sector organisations to use text from this booklet in their own information about ADHD.

## 6 Related NICE guidance

### Published

Drug misuse: psychosocial interventions. NICE clinical guideline 51 (2007).

Available from [www.nice.org.uk/CG51](http://www.nice.org.uk/CG51)

Parent-training/education programmes in the management of children with conduct disorders. NICE technology appraisal guidance 102 (2006). Available from [www.nice.org.uk/TA102](http://www.nice.org.uk/TA102)

Methylphenidate, atomoxetine and dexamfetamine for attention deficit hyperactivity disorder (ADHD) in children and adolescents (review of technology appraisal 13). NICE technology appraisal guidance 98 (2006).

Available from [www.nice.org.uk/TA98](http://www.nice.org.uk/TA98)

### Under development

NICE is developing the following guidance (details available from [www.nice.org.uk](http://www.nice.org.uk)):

- Antisocial personality disorder: treatment, management and prevention. NICE clinical guideline (publication expected January 2009).
- Borderline personality disorder: treatment and management. NICE clinical guideline (publication expected January 2009).

## 7 Updating the guideline

NICE clinical guidelines are updated as needed so that recommendations take into account important new information. We check for new evidence 2 and 4 years after publication, to decide whether all or part of the guideline should be updated. If important new evidence is published at other times, we may decide to do a more rapid update of some recommendations.

## **Appendix A: The Guideline Development Group**

### **Professor Eric Taylor (Chair)**

Head of Department of Child and Adolescent Psychiatry, Institute of Psychiatry, King's College London

### **Dr Tim Kendall (Facilitator, Guideline Development Group)**

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### **Professor Philip Asherson**

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### **Mr Simon Bailey (2006–2007)**

Service User Representative

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### **Ms Amy Brown (2006–2007)**

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### **Ms Liz Costigan (2006–2007)**

Project Manager, The National Collaborating Centre for Mental Health

### **Mr Alan Duncan**

Systematic Reviewer, The National Collaborating Centre for Mental Health

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Professor of Education and Director of the Curriculum, Evaluation and Management Centre, Durham University, Durham

**Dr Miranda Wolpert (2006–2007)**

Director, CAMHS Evidence Based Practice Unit, University College London and Anna Freud Centre, London

**Professor Ian Wong**

Professor of Paediatric Medicine Research, Centre for Paediatric Pharmacy Research, The School of Pharmacy, London

**Dr Susan Young**

Senior Lecturer in Forensic Clinical Psychology, Institute of Psychiatry, King's College London, Honorary Consultant Clinical and Forensic Psychologist, Broadmoor Hospital, West London Mental Health Trust

## **Appendix B: The Guideline Review Panel**

The Guideline Review Panel is an independent panel that oversees the development of the guideline and takes responsibility for monitoring adherence to NICE guideline development processes. In particular, the panel ensures that stakeholder comments have been adequately considered and responded to. The panel includes members from the following perspectives: primary care, secondary care, lay, public health and industry.

### **Professor Mike Drummond (Chair)**

Professor of Health Economics, University of York

### **Ms Catherine Arkley**

Lay Member

### **Dr David Gillen**

Medical Director, Wyeth Pharmaceuticals

### **Dr Graham Archard**

General Medical Practitioner, Stour Surgery, Dorset

### **Ms Karen Cowley**

Practice Development Nurse, North Yorkshire